

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 31

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAMES P. BAUKUS,
WILLIAM M. CLARK, JR., LAP-WAI CHOW,
and ALLAN R. KRAMER

Appeal No. 95-3779
Application 08/191,063¹

ON BRIEF

Before THOMAS, HAIRSTON, and KRASS, Administrative Patent Judges.
KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of
claims 1 through 15 and 21. Claims 22 and 23 stand withdrawn as
being directed to a nonelected invention.

The invention is directed to an integrated circuit security
system for preventing reverse engineering of an integrated
circuit. More particularly, multiple logic circuits are provided

¹ Application for patent filed February 3, 1994. According to
appellants, this application is a continuation of Application
07/923,411, filed July 31, 1992.

which have discernible layouts, which look alike to a reverse engineer, but with dopant implant interconnections that are not discernible by reverse engineering.

Representative independent claim 1 is reproduced as follows:

1. A secure integrated circuit (IC), comprising:

a semiconductor substrate,

at least two logic circuits of different types formed in said substrate with layouts which make said two logic circuits look alike to a reverse engineer, each logic circuit having doped IC elements, and

an interconnect for at least one of said elements, said interconnect comprising a dopant implant in said substrate of like conductivity to said element, and providing an electrical signal path to interconnect said element with another portion of the IC, said dopant implant being substantially not discernible by reverse engineering techniques.

The examiner relies on the following references:

Koepe	4,799,096	Jan. 17, 1989
Kuwana	5,138,197	Aug. 11, 1992
		(filed May 22, 1991)
Sawase (JP)	58-190064	Nov. 5, 1983

Claims 1 through 15 and 21 stand rejected under 35 U.S.C. ' 112, first paragraph, under the written description provision of that statutory section as being based on a specification that allegedly fails to provide support for the invention as is now claimed.

Claims 1 through 15 and 21 also stand rejected under 35 U.S.C. ' 103 as unpatentable over Kuwana.

Moreover, claims 1 through 15 and 21 stand further rejected under 35 U.S.C. ' 103 with Koeppel being relied upon for evidence of the obviousness of claims 1 through 4, 6 through 13, 15 and 21, the examiner adding Sawase with regard to claims 5 and 14.

Rather than reiterate the positions of appellants and the examiner, reference is made to the briefs and answer for the respective details thereof.

OPINION

We turn first to the rejection based on the written description portion of 35 U.S.C. ' 112. The examiner takes the position that none of the original structures look alike because the specification states that the structures "may be made to look alike" [page 4-line 34-35] and this is not a statement of certainty. The examiner then points to connections 20, 22, 32 and 36 in Figures 1b, 2b and 5, stating that they do not look alike and concludes that since the claims require the two circuits to look alike, there must be a lack of support for this subject matter in the claims.

The examiner's position is misplaced. While the examiner is correct in the assessment that the connections in the various figures of the drawing do not look alike, this is a crucial part of the invention. As described throughout the specification, the layouts of the logic circuits do look alike to the reverse engineer. It is the dopant implant interconnections which do not

look alike but are not discernible by the reverse engineer. Thus, the invention, as claimed, has clear support in the instant disclosure.

We will not sustain the rejection of claims 1 through 15 and 21 under 35 U.S.C. ' 112, first paragraph.

Turning now to the rejections under 35 U.S.C. ' 103, we also will not sustain these rejections. The examiner relies on Figures 5 and 6 of Koeppel and on Figures 4 and 8 of Kuwana and contends that the two figures, representative of logic circuits, in each reference show layouts of different types of logic circuits which "look alike" along with dopant implant interconnections which are obviously not discernible by reverse engineering.

Appellants do not deny, and, in fact, with respect to Koeppel, admit [at page 5 of the principal brief], that the principal references employ implanted interconnects that would not be discernible to a reverse engineer. However, independent claims 1 and 7 also require, with respect to claim 1, that the logic circuits have "layouts which make said two logic circuits look alike to a reverse engineer" and, with respect to claim 7, that the logic gate have "a layout which makes it look like another kind of logic gate."

Notwithstanding any position of the examiner to the contrary, we simply do not find the circuit layouts in Figures 5

and 6 of Koeppe to "look alike" nor do we find the circuit layouts of Figures 4 and 8 of Kuwana to "look alike" as required by the instant claims. The circuit arrangement of Koeppe's Figure 5, depicting three parallel circuit branches is clearly quite different looking than Figure 6 of that reference depicting a circuit arrangement having four parallel circuit branches. Similarly, the NAND-gate layout in Figure 8 of Kuwana is quite clearly different looking than the circuit layout shown in Figure 4 of Kuwana.

The Sawase reference, applied against dependent claims 5 and 14 in combination with Koeppe, does not provide for the deficiencies noted supra with regard to Koeppe.

Accordingly, since neither Koeppe nor Kuwana discloses or suggests the multiple different logic circuits having discernible layouts which look alike, but do not implant interconnections not discernible by reverse engineering, as claimed, the examiner's rejection of the claims under 35 U.S.C. ' 103 is reversed.

We have reversed both the rejection of the claims under

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35 U.S.C. ' 112, first paragraph, and the rejection of the claims under 35 U.S.C. ' 103. Accordingly, the examiner's decision is reversed.

REVERSED

James D. Thomas)	
Administrative Patent Judge)	
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Kenneth W. Hairston)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
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)	
Errol A. Krass)	
Administrative Patent Judge)	

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S.E. Walters
Hughes Electronics
Mail Station A126, Bldg. C1
P.O. Box 80028
Los Angeles, CA 90080-0028